

SUMMARY

OF THE

IMPROVEMENTS AND DISCOVERIES

IN THE

MEDICAL SCIENCES.

ANATOMY AND PHYSIOLOGY.

1. *Structure of the Human Placenta.*—JOHN DALRYMPLE, Esq. read before the Medical and Chirurgical Society (Nov. 23, 1841), an interesting paper on this subject.

In the early part of the year 1841, Mr. D. states, that having pursued some anatomical investigations into the structure of the human placenta at term, and having made several drawings of the injected capillaries of the tufts, he afterwards had an opportunity of seeing the copies of Weber's drawings, given in the "*Icones Physiologicae*" of Wagner, and transferred to the pages of Dr. Willis's translation of the latter author's *Physiology*. The resemblances of the present drawings to those given by Dr. Willis were so striking, as to go far of itself to prove the correctness of both draughtsmen, and to corroborate the views entertained by Weber of the anatomical conditions of the organ. They differed also from the engravings by Dr. Reid (given in the January number of the "*Edinburgh Medical and Surgical Journal*" for 1841), inasmuch as nowhere could be seen an artery and vein running, side by side, forming an apparently single vessel, though with a double tube, and terminating abruptly, in blunted extremities, where the anastomosis took place between them.

First. It appeared from Mr. D.'s observations that the placenta was made up of the innumerable subdivisions of the umbilical vessels terminating in beautifully coiled and convoluted capillaries, which formed tufts or bouquets of vessels, clothed by a prolongation of the endochorion, derived from the fetal surface of the organ.

Second. That nowhere did a division of an umbilical artery terminate otherwise than in a branch of the umbilical vein; and each branch as well as tuft of vessels was covered by a prolongation of the before named membrane.

Third. That each tuft was, in fact, a real villus, the endochorion being covered externally with an epithelium-like tissue, having nucleated cells and corpuscles.

Fourth. The uterine surface of the placenta is covered by the decidua, which does not appear to enter further into the structure of the organ than between the lobules, and the depth to which it thus penetrates varies with the depth of the fissures.

Fifth. That fibrous bands stretch from the fetal to the placental surface of the organ, giving firmness and support to the vessels.

Sixth. That there are no defined cells in the placenta, but that the nutrient fluids of the mother are poured into the interstices of the tufts, which are not bound or connected together by a common cellular tissue.

Seventh. That on the decidual surface of the placenta are thinly scattered here and there blunt conical papillæ, about a line and a half in length, made up of innumerable coiled and contorted capillaries. Query? Are these the analogues of the fetal cotyledons of the ruminants?

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From these observations, which were given in minute detail, the author has attempted to simplify the functions of the human placenta. He observes, that in the incubated egg, in consequence of the non-connection between the embryo and parent, a nutrient or respiratory organ is indispensable, and hence the more complicated system of vessels. That in the oviparous vertebrata, the vitelline sac, and the omphalo-mesenteric vessels, represent the placenta of the mammalia, which is the absorbent organ of the fœtus; but while, in the one case, the nutrient materials of the mother, already aerated by her lungs, are conveyed by the uterine arteries for absorption and nutrition of the embryo; in the other, the materials of the blood are absorbed by the folds of the vitelline sac, and conveyed through the circulation of the young bird, requiring, however, contact with oxygen for a second circulation. Hence a new membrane, or one that is persistent up to the time of independent respiration, namely, the allantois; and hence, also, the more complicated system of its vessels. The allantois, as a respiratory membrane, exists only as a rudimentary organ in mammalia; and the function of the placenta being solely that of nutrition by already oxygenized materials, the cord contains only a simple system of incurrent and excurrent vessels.—*Prov. Med. and Surg. Journ.* 18 Dec. 1841.

2. *Regeneration and Union of Nerves.*—By MM. GUNTHER and SCHON. The following observations were made on rabbits, about fifty of which were operated on, by sometimes cutting across the ischiatic nerves, at other times by removing a portion varying from two to four lines in length. These physiologists describe the elementary fibres of the nerves as transparent cylinders with double tunics, filled with a fluid resembling liquid albumen. After maceration in water, or after death, this fluid coagulates and produces the turbid granular aspect which till now, has been considered its natural appearance. When the two extremities of a nerve which has been cut across become united, the nerve propagates impression through the uniting medium. This is done by means of true primary fibres having been formed through the uniting medium, and the following is the mode in which MM. Gunther and Schon have observed this to take place. After division of the nerve the two ends retract somewhat, the diameter of the neurilema becomes diminished, and the medullary substance is pushed out in a globular form; exudation of plastic lymph then occurs and fills the wound, and the cut extremities of the nerve become swollen, the upper extremity more than the lower. This tumefaction of the nerve itself is owing to the presence of plastic lymph effused into the cellular tissue and also between the neurilema and primitive fibres.

The matter which unites the two ends of the nerve is at first amorphous, but by degrees primitive fibres shoot through the mass, and become visible at the earliest on the eighth week after the division. These new fibres are in every respect similar to the original fibres; but the granular exudation and the cellular tissue which surround and envelope them render them difficult of examination. These fibres are not parallel, but exhibit a confused arrangement.

With the regeneration of the fibres of the nerve returns the sensibility and mobility of the limb or organs to which the nerve was distributed.

But in general the function of the part is not so free as before the division;—the animals not being able to use the limb whose nerve had been divided so freely as the other. The influence of the will over the limb was also observed to be diminished. MM. Gunther and Schon account for this on the supposition, which is borne out by their experiments, that the number of fibres which are regenerated is not equal to those which originally existed; besides, it appeared to them that the regenerated fibres occasionally united the ends of different primitive fibres, so that sensation was not always referred to its proper place. They consider that the regeneration or growth of the uniting fibre commenced at the superior extremity of the divided nerve, but concede that it is possible that it also may take place from the lower extremity.—*Ed. Med. & Surg. Journ.* Jan. 1842, from *Archives Générales*, March, 1841.

3. *Experimental Researches on the Function of the Skin in Man and Animals.*—M. DUCROS, in a very experimental paper, shows that a coating of gum-lac put on the skins of animals causes them to die in a longer or shorter time, by producing convulsive movements similar to epilepsy. When the animals, coated with gum-lac, were subjected to electricity, they died in a much shorter time. He next tried the effect of metallic coverings, as he entertained the notion that, because they had opposite electrical properties, the animals coated with them would die with symptoms of an opposite nature. He therefore cut off the hair from some animals and covered them with thin plates of tin (tin-foil), and found that they perished with symptoms of debility, the reverse of what he had noticed when the coating consisted of a resinous substance. When the tin was covered with a coating of gum-lac, the animals perished still more rapidly. He then placed under the influence of electricity some of the animals covered with plates of tin, and found that, so long as they remained connected with the electrical current, their vigour appeared to be restored, but that, whenever it was arrested they appeared ready to perish.

The object of these experiments was to ascertain what would be the likely effect of such coverings in certain diseased states of the human frame, and especially in nervous or neuralgic affections, and in rheumatism. He reasoned, that, if metallic coverings deprived animals of life by producing rapid sinking of the vital powers, the same metallic plates applied to the human body would cure or remove those diseases which seemed to depend on an excess of organic life. On putting his plan to the test of practice, he was so fortunate as to find that it removed some nervous, and a few acute and chronic rheumatic affections.

This plan of treatment was of no avail in any case where the disease was dependent on or connected with organic lesions, or attended with fever, or swelling of the part, or with general weakness; on the contrary, in all these cases the metallic plates augmented the disorder.—*Edinburgh Med. and Surg. Journ.* Jan. 1842, from *Comptes Rendus*, 20th Sept. 1841.

4. *Absence of the Uterus, Vagina, &c.*—Several cases of this description have recently been mentioned in this Journal. (See vol. xxvi, p. 39, 185; vol. i, new series, p. 348, 493, 494; vol. ii, p. 270; and in the last number, at p. 199.) We add to these the following:

1. By Dr. R. BOYD, (*Medico-Chirurgical Transactions*, vol. xxiv.)—A female, aged 72, died of chronic disease of the brain and lungs. On dissection, the right ovary was found natural, and a round ligament connected to it was lost in the cellular tissue behind the neck of the bladder. The situation of the left ovary was occupied by a fibrous tumour, of an irregular, globular shape, connected by a round ligament, smaller than that on the right side, but which took a similar course to the bladder. The Fallopian tubes were not present. There was no vestige of a uterus. The external parts of generation presented no unusual appearance; but an aperture, about half an inch deep, beneath the orifice of the vagina, was all that existed of the vagina. The breasts were well developed for so old a person.

The only information obtained concerning this individual was, that she had been married, but did not live on amicable terms with her husband.

2. By Dr. WEHR, of Kassel, (*Brit. and For. Med. Rev.* October, 1841, from *Casper's Wochenschrift*.)—The patient was a small, weakly woman, who died at the age of 54. At puberty, her breasts did not enlarge, nor did she then or ever after menstruate, though, at almost regular monthly periods, she had pains in the limbs and other parts of the body. Throughout life, she enjoyed moderately good health, and suffered from no peculiar symptoms. She died of pneumonia.

After death, the clitoris was found very much developed, but there were scarcely any traces of nymphæ, and but little hair about the external organs. The vagina was very small, the hymen perfect, and the orifice of the urethra large. The form of the uterus was preserved in the arrangement of the peritoneum, but very little of its substance was found in what corresponded to its

body, cornua, and only a little more in its cervix. The left ovary resembled only an elongated, flattened cyst, full of fluid; the right ovary was in nearly the same state, but appeared connected, by a little tubercle, with the rim of the pelvis. The Fallopian tubes were of about the natural length, but their size was small and proportioned to that of the uterus and ovaries; their abdominal orifices were small, and surrounded by a few imperfect fimbriæ. The orifice of the uterus was flaccid, the cervical part of the cavity was wide, and was continued through the body into two separate cornua.

5. *On the Stinging Organs of the Medusæ.*—The severe effects produced by these animals are generally noticed in all extended works on poisons. Dr. WAGNER, of Gottingen, remarks, that it has not yet been ascertained whether the stinging or burning power of these is to be ascribed to a corrosive liquid or to a mechanical injury. He imagines that his examinations, made at Nice and Villafranca in 1839, will aid in deciding the question.

The origin of the stinging is to be referred to the external surface of the skin. This has a beautiful, brownish, violet and reddish colour in various parts; and when separated, which is easily done, there appears the homogeneous, jelly-like substance, which constitutes the real body of the animal. Where the red spots occur, we find, after the skin is detached, round elevations or inequalities like warts.

Between the red grains of pigment are to be observed round balls or bubbles, out of which, frequently, by the aid of a powerful magnifying power, (for this whole organization can only be recognized by the microscope,) fine threads are seen to project. These threads, spirally rolled up, often come out of themselves, but always do so on the application of a slight pressure. The balls or capsules, which contain these threads, are very loosely attached and easily fall, and are rubbed off along with the slime when the medusa loses its skin; they are found in quantity, as are also the threads themselves in what is termed the stinging slime of the medusæ, as is easily ascertained when these animals are kept in vessels.

The slightest touch of a medusæ causes a perceptible burning sensation, and this is more or less severe, according to the vigour of the animals. They only sting from parts of their bodies where the epidermis is preserved. Dr. Wagner never experienced the sensation when he came in contact with portions in which the epidermis had been removed. In his case, a burning sensation was felt in from a few seconds to a minute after contact; after five minutes, a slight redness appeared in his case, and then a simple, lentil-shaped elevation; but, more frequently, three or four near one another. The appearance sometimes resembles nettle-rash. The pain generally soon ceases, but it lasted half a day with one of the party, Dr. Will, and, after eight days, a redness was still perceptible.

The internal substance of the body (jelly) never stings, nor does any part, where the pigment spots, the capsules, and the hairs are wanting.

Dr. Wagner thinks it probable that the stinging has a mechanical and chemical origin, and that the parts above described are poison-organs.—*Edin. New Philosophical Journ.* Jan. 1842.

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MATERIA MEDICA AND PHARMACY.

6. *Isinglass Plaster.*—MR. LISTON has for many years been in the habit of using, after operations and for other surgical purposes, a plaster, consisting of oiled silk covered with a coating of isinglass.

The following is the method of preparing it:—Moisten an ounce of isinglass with two ounces of water, and allow it to stand for an hour or two until quite soft; then add three ounces and a half of rectified spirit, previously mixed with one ounce and a half of water. Plunge the vessel in a saucepan of boiling water, and the solution will be complete in a few minutes.